Motivations, Satisfaction and Expenditures of Recreational Pelagic Charter Fishing Patrons in Hawaii

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SOEST 01-03
JIMAR Contribution 01-339

Pelagic Fisheries Research Program

JOINT INSTITUTE FOR MARINE AND ATMOSPHERIC RESEARCH ~UH-NOAA~
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ACKNOWLEDGMENTS

The authors thank the Hawaii charter fishing vessel owners, captains, crew and booth operators for their cooperation in this study. We especially thank Mike House, Dave Taylor, Rick Gaffney, Donnell Tate, Etsuyo Senoo, Takeo Izawa, Chuck Johnston and the staff at *Hawaii Fishing News*. Gratitude is also extended to Dr. Samuel G. Pooley, Kurt Kawamoto, Russell Ito, Walter Machado, Dr. William Walsh and Marcia Hamilton.

This project was funded by cooperative agreement #654558 between the Joint Institute for Marine and Atmospheric Research (JIMAR) and the National Oceanic and Atmospheric Administration (NOAA). The views expressed herein are those of the authors and do not necessarily reflect the views of NOAA or any of its subdivisions.

ABSTRACT

Recreational pelagic charter fishing is a notable component of tourism in Hawaii with direct revenues of approximately $17 million, indirect revenues of over $30 million and an estimated 77,000 annual participants. For the purpose of this study pelagic charter fishing is defined as trips on six-person vessels that primarily target Istiophoridae (blue marlin, *Makaira mazara*, and striped marlin, *Tetrapturus audax*) and are chartered for a daily fee. This study describes several aspects of the charter fishing experience, including patrons' motivations for coming to Hawaii and going charter fishing, their related expenses, valuation of the fishing experience in dollar terms, and the characteristics of the quality of the fishing experience. Information was obtained by distributing mail-in survey instruments to patrons at the end of their fishing trips.

A total of 1943 survey instruments were distributed and 328 were returned. Return rates varied greatly depending upon the source of distribution (13% and 70% by those distributed by charter captains and by researchers, respectively). The results of the survey instruments distributed by the researcher as well as the in-person interviews detected no 'distribution' or 'return' biases due to using captains as the primary source of survey distribution.

Typical charter fishing patrons are educated, relatively prosperous, middle-class American males. Generally speaking, charter fishing is not a primary attraction for travelling to Hawaii. Despite overall dissatisfaction with the amount of fish caught, charter patrons were apparently satisfied with the Hawaii charter fishing experience, which was largely due to a positive relationship between the patrons and the charter boat captain and crew. Contingent valuation questions revealed that most charter patrons would rather fish than accept monetary compensation and many would be willing to pay a small amount (< $25) for a daily fishing license. Objections to the license fee were based on ideological beliefs at lower fee levels and economic restrictions at higher fee levels. Results also indicated that the majority of patrons support catch/tag and release programs, especially over keeping billfish for personal consumption, sale or mounting. Other information such as reported catch, disposition of catch, and motivations and expenditures involved with visiting and going charter fishing in Hawaii are also reported.

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1. RECREATIONAL PELAGIC CHARTER FISHING PATRON SURVEY

1.1 Introduction

Recreational pelagic charter fishing, defined as trips on six-person vessels that primarily target Istiophoridae (blue marlin, *Makaira mazara*, and striped marlin, *Tetrapturus audax*) and are chartered daily for a fee, has been a popular sport in Hawaii since the early 1900's. The charter industry did not fully develop until after World War II when the military cheaply sold off vessels which were easily converted into fishing vessels thereby reducing the costs of operations. This, combined with the advent of the 'shared trip' innovation brought the cost of charter fishing within reach of the average consumer (Markrich, 1994).

Today recreational pelagic charter fishing is a notable component of tourism in Hawaii. Total generated revenue was estimated to be $8.1 million in 1982 (Samples et al., 1984), $17 million in 1990 (Markrich, 1994) and $16.5 million in 1992 (Sharma et al., 1999). The industry attracts an estimated 77,000 annual participants (Markrich, 1994) and employs approximately 400 captains and crewmembers (Walker, 1997). The Hawaii Department of Land and Natural Resources, Division of Aquatic Resources (HDAR) issued 163 Commercial Marine Licenses (CML) to vessels for charter fishing in 1999 (R. Kokobone (HDAR), pers. comm.). Hamilton (1998) reported an average of 166 charter trips per vessel during a 12 month period in 1996-1997.

Previous studies of Hawaii's charter fishing industry have reported on the Kailua-Kona charter vessel operator and charter patron economics (U.S. National Marine Fisheries Service, 1983), the basic structure and an economic appraisal of charter boat fishing (Samples et al., 1984), the demographics, motivations, expenditures, and valuation of charter patrons (Samples and Schug, 1985), the economic status of recreational fishing in Hawaii including charter fishing (Markrich, 1994), the sociology of the charter fleet (Walker, 1997), and an assessment of the charter fleets' cost and earnings (Hamilton, 1998). The current study further examines the pelagic charter fishing industry in Hawaii by documenting basic demographics of charter fishing patrons. It also assesses the patrons' motivations, related expenses, valuation of the fishing experience in dollar terms, and the characteristics of the quality of their fishing experience. Additionally, specific patron attributes are compared to those reported in a previous study of Hawaii charter fishing patrons (e.g., Samples and Schug, 1985).

This report will provide baseline information for other researchers investigating the pelagic charter fishing industry in Hawaii (e.g., economic assessments of the charter fishing industry as directed by the Magnuson-Stevens Fishery Conservation and Management Act of 1976 (as amended through 1996)[1]). It will also provide useful information for the charter fishing industry and Hawaii state tourism agents for marketing purposes. The objectives of the study were met by distributing survey instruments to charter fishing patrons at the end of their fishing trip during 2000-2001.

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(3) Research on the fisheries, including the social, cultural, and economic relationships among fishing vessel owners, crew, United States fish processors, associated shoreside labor, seafood markets and fishing communities.

The first section of the report describes the method in which the data were collected along with the results, discussion and conclusion of the charter fishing patron data. Section two describes unstructured interviews and observations of the researchers while collecting data for section one.

1.2 Methods

Charter patron information was collected by distributing mail-in survey instruments to patrons at the conclusion of their fishing trips. Two types of instruments were developed based on previous instruments used by researchers in Hawaii (specifically Samples and Schug, 1985) and elsewhere. A 'valuation' instrument (Appendix A) focused on the worth of charter fishing as perceived by patrons, and an 'expenditure' instrument (Appendix B) focused on costs associated with the trip to Hawaii and the fishing trip. A Hawaii resident ('kama'aina') version of both instruments was developed for use by local charter patrons and a Japanese language version was developed for use by Japanese tourists. Each instrument contained similar demographic and other questions to allow comparison across the range of respondents regardless of survey type. Each instrument contained instructions for proper completion, and a self-addressed stamped envelope was provided for easy return to researchers. An art print of a Hawaiian scene and a recent copy of *Hawaii Fishing News*, a local magazine geared towards fishing enthusiasts, were promised to each respondent as incentives for patron participation. A toll free phone number was also provided for persons with questions or comments. Researchers met with charter fishing industry representatives, letters were sent to charter vessel captains, and a press release was published in *Hawaii Fishing News* in order to inform the industry and general public of the impending study. Pre-tests of the instruments, conducted in the spring of 1999, indicated that charter patrons were able to understand the instruments, and charter vessels captains were deemed an acceptable means to distribute instruments to their patrons.

Wave one of instrument distribution began in July 1999, with participating vessels at the home ports of Nawiliwili and Port Allen on Kauai, Kewalo Basin, Waianae and Haleiwa on Oahu, Kaunakakai on Molokai, Lahaina and Maalaea on Maui, and Honokohau on Hawaii (Figure 1). An average of 32 instruments was distributed to each charter vessel captain interested in participating in the study. Captains were asked to give instruments non-selectively to one member of one or more distinct parties on any given trip. Packets of instruments were also given to three well-known charter agents (one of which catered exclusively to Japanese tourists) to distribute to charter captains they thought would be interested in participating in the study.

Wave two was initiated in November, 2000. Again packets of instruments were distributed to charter captains, but during this wave packets contained only 10 instruments. This was done with the thought that the captains who participated in wave one felt overwhelmed with the large number of instruments and may not have distributed all of them. Only vessels that did not participate in wave one were used in wave two.

During wave two, one researcher visited the fishing ports of Kewalo Basin, Lahaina, and Honokohau in order to distribute instruments directly to charter patrons and to conduct brief interviews with the patrons. Before patrons were approached, researchers sought permission from the charter captain to talk to their patrons and give them an instrument. If the captain gave consent, patrons were approached as they departed the fishing docks and asked three questions:

1) *Are you satisfied with the amount of fish you caught today on your charter?*
2) *Are you happy with the captain and crew of the vessel you fished on today?*
3) *Did you have an overall enjoyable trip today?*

Each patron interviewed was assigned a number which corresponded with the instrument they were given so that return rates could be calculated, especially as they relate to the patrons responses to the interview questions. The purpose of in-person distribution and interviews was to identify any 'distribution' bias (captains only distributed instruments to patrons who they believed would report a favorable fishing experience on the instruments), 'return' bias (only patrons who had favorable fishing experiences returned the instruments) or both. The in-person instrument distribution and interviews also allowed evaluation of the method of using charter vessels captains to distribute instruments.

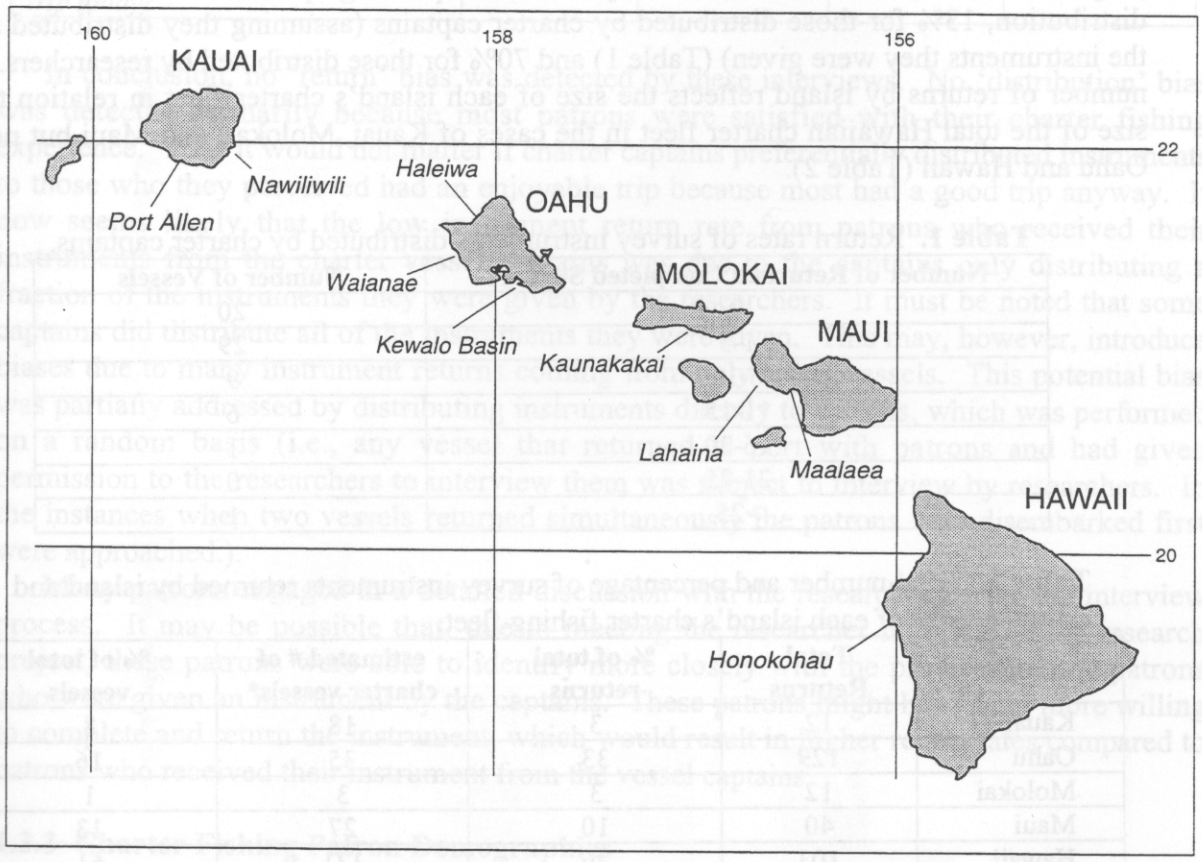

Figure 1. Map of Hawaii showing the location of the charter fishing harbors sampled.

Initially the sampling design for determining the number of instruments distributed per port drew from the work of Hamilton and Huffman (1996) who enumerated active charter vessels across Hawaii. During wave two instruments were distributed to ports with the goal of boosting the number of instrument returns and also to have final instrument returns match the size of each islands fleet in relation to the size of the statewide fleet (e.g., Kauai's charter fishing fleet comprises approximately 5% of the total Hawaiian charter fishing fleet;

therefore the aim was to have approximately 5% of the total instrument returns come from the island of Kauai).

The project also allowed researchers to casually observe charter operators and patrons. Patron-host interactions were observed and documented with the intent of describing and explaining the social, cultural, and economic aspects of the contemporary charter fishing scene and fleet interaction in Hawaii (see section 2).

1.3 Results and Discussion

1.3.1 Survey Instrument Distribution and Response Rates

The survey instrument return rate of the pre-test phase was 60%, which was considered sufficient to use charter captains as the primary distributors of the survey instruments. However, the instrument return rate from waves one and two (17%) was much lower than the pre-test rates. The return rates drastically differed depending upon the source of instrument distribution, 13% for those distributed by charter captains (assuming they distributed all of the instruments they were given) (Table 1) and 70% for those distributed by researchers. The number of returns by island reflects the size of each island's charter fleet in relation to the size of the total Hawaiian charter fleet in the cases of Kauai, Molokai, and Maui but not for Oahu and Hawaii (Table 2).

Table 1. Return rates of survey instruments distributed by charter captains.

Number of Returned Completed Surveys	Number of Vessels
0	20
1-5	29
6-10	9
11-15	6
16-20	1
21-25	0
>25	1

Table 2. Total number and percentage of survey instruments returned by island and estimated size of each island's charter fishing fleet.

Island	Total Returns	% of total returns	estimated # of charter vessels*	% of total vessels
Kauai	12	3	18	8
Oahu	129	33	35	16
Molokai	12	3	3	1
Maui	40	10	27	13
Hawaii	103	26	131	61
Unknown	95	24		
Total	391		214	

*Information from Hawaii Department of Land and Natural Resources and researchers' personal observations.

1.3.2 In-Person Interviews

During wave 2, the researcher approached a total of 132 charter fishing patrons as they departed the fishing docks after their fishing trip (only 5 vessels (8%) did not grant permission to researchers to speak to their patrons). A total of 123 in-person interviews were conducted with one mail-in survey instrument being distributed to each interviewee. Return

rates were essentially equal regardless of how people responded to the first interview question (Table 3). Therefore fishing success had no influence on the instrument return rates. Because 99% of those interviewed replied "Yes" to questions two and three, it does not appear that satisfaction with the captain and crew and overall satisfaction of the fishing trip had any bearing on willingness of the patron to complete and return the instruments.

Table 3. Survey instrument return rates by patron response to interview questions.

Question asked to charter fishing patrons	Yes		No	
	% Replied	% Returned	% Replied	% Returned
Are you satisfied with the amount of fish you caught today?	26	69	74	66
Are you happy with the captain and crew?	99	66	1	100
Did you have an overall enjoyable trip today?	99	67	1	0

In conclusion, no 'return' bias was detected by these interviews. No 'distribution' bias was detected primarily because most patrons were satisfied with their charter fishing experience. Thus it would not matter if charter captains preferentially distributed instruments to those who they perceived had an enjoyable trip because most had a good trip anyway. It now seems likely that the low instrument return rate from patrons who received their instruments from the charter vessel captains was due to the captains only distributing a fraction of the instruments they were given by the researchers. It must be noted that some captains did distribute all of the instruments they were given. This may, however, introduce biases due to many instrument returns coming from only a few vessels. This potential bias was partially addressed by distributing instruments directly to patrons, which was performed on a random basis (i.e., any vessel that returned to port with patrons and had given permission to the researchers to interview them was subject to interview by researchers. In the instances when two vessels returned simultaneously the patrons who disembarked first were approached.).

Many patrons engaged in a detailed discussion with the researcher during the interview process. It may be possible that, due to meeting the researcher involved in the research project, these patrons were able to identify more closely with the project than the patrons who were given an instrument by the captains. These patrons might have been more willing to complete and return the instrument, which would result in higher return rates compared to patrons who received their instrument from the vessel captains.

1.3.3 Charter Fishing Patron Demographics

Both the expenditure and valuation survey instruments asked the charter fishing patrons basic demographic questions. No instructions were given as to which person in the charter group should complete the survey–this was decided by members of each group.

The vast majority (84%) of the survey respondents were male. It is possible that males assumed the survey completion duty, thereby over-representing males, however, observations by the researchers support survey findings. Figure 2 indicates that most respondents were from the U.S. mainland, with California representing the state with the highest percentage of patrons. Japan and Canada were the main foreign countries represented. Returned instruments indicated that respondents were typically affluent (Figure 3), educated (Figure 4)

and employed in what are typically considered white-collar positions (Table 4). Average age and range of male and female respondents were 43.9 (13-87) and 45.3 (15-75) years, respectively (these data represent the age of the individual who completed the instrument). Most patrons had some charter fishing experience (71%) with an average of 5 (SD=8.3) previous trips taken in Hawaii and 6 (SD=9.5) outside Hawaii. Interestingly 46% of the respondents report getting seasick sometimes or all the time. Observations confirm that some patrons do get sick in even relatively minimally rough conditions, diminishing the quality of the experience.

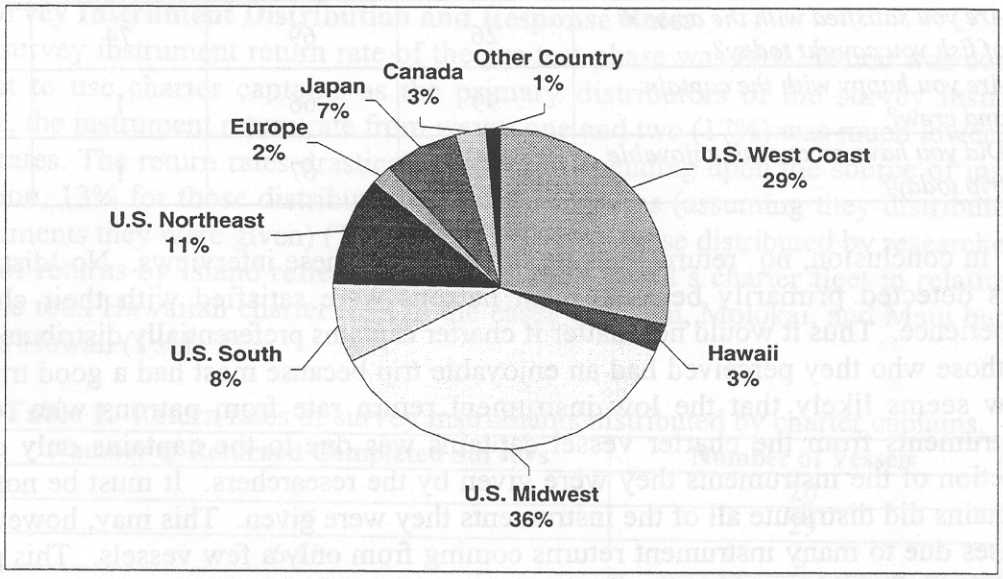

Figure 2. Charter fishing patrons' reported residence.

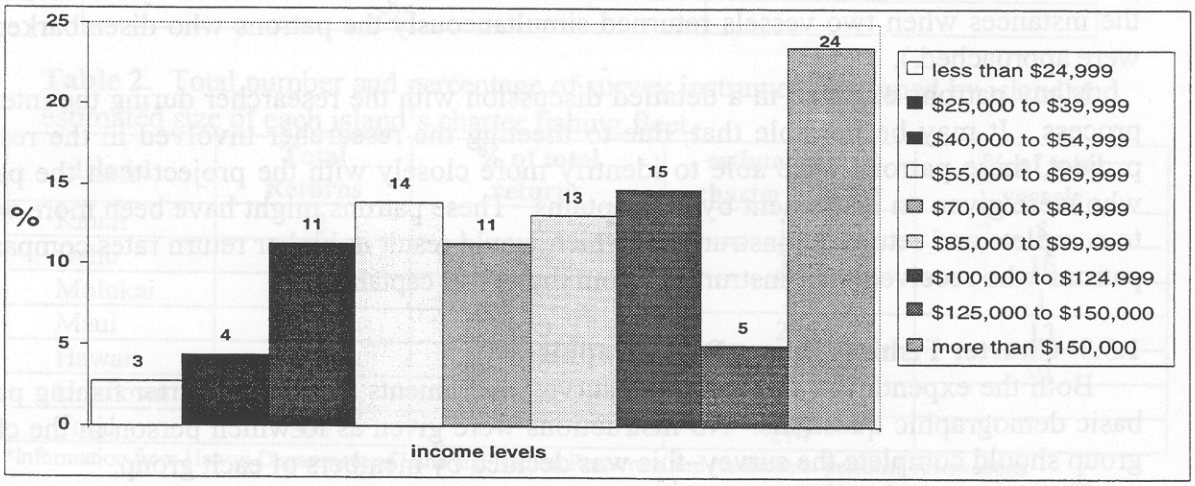

Figure 3. Charter fishing patrons' reported annual household income.

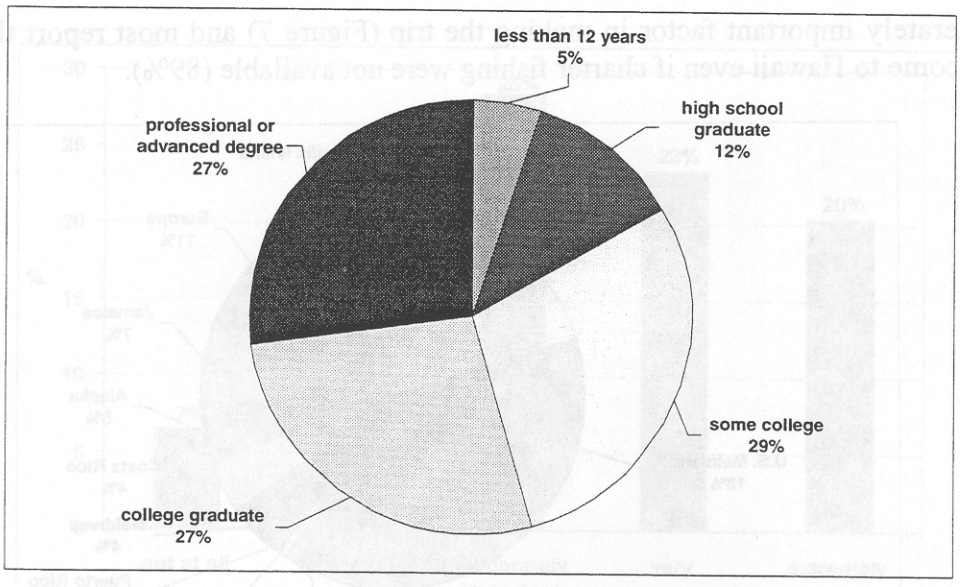

Figure 4. Charter fishing patrons' reported educational attainment (n=375).

Table 4. Charter fishing patrons' reported occupations.

What is your primary occupation?	Frequency	Percent (n=353)
Management/administration	58	16.4
Sales/advertising/marketing	51	14.4
Construction related/contractor	38	10.8
Engineer/architectural design	37	10.5
Retired	31	8.8
Accounting/financial advisory	18	5.1
Education related	13	3.7
Computer related	13	3.7
Self-employed	13	3.7
Medical/health services	11	3.1
Manufacturing	9	2.5
Domestic engineer	8	2.3
Law related	8	2.3
Food/hotel	7	2.0
Student	7	2.0
Other	31	8.8

1.3.4 Hawaii Trip Related Decisions

This section analyses some of the decision-making processes associated with motivations to come to Hawaii and what to do upon arrival. The majority of respondents (79%) did not consider any vacation destinations other than Hawaii. Of those who did consider other destinations Mexico was the first consideration (20%) (Figure 5). The vacation (85%) was clearly the principal motivating factor for coming to Hawaii, compared to those who came for business purposes (7%). Of those who come to Hawaii for vacation the "sun and beaches" (56%) were the most enticing attributes, although "fishing" (18%) was also a fairly significant reason (Figure 6). A high percentage of respondents (79%) indicated having made their decision to go charter fishing before coming to Hawaii, yet it figured as only a

moderately important factor in making the trip (Figure 7) and most report that they would still come to Hawaii even if charter fishing were not available (89%).

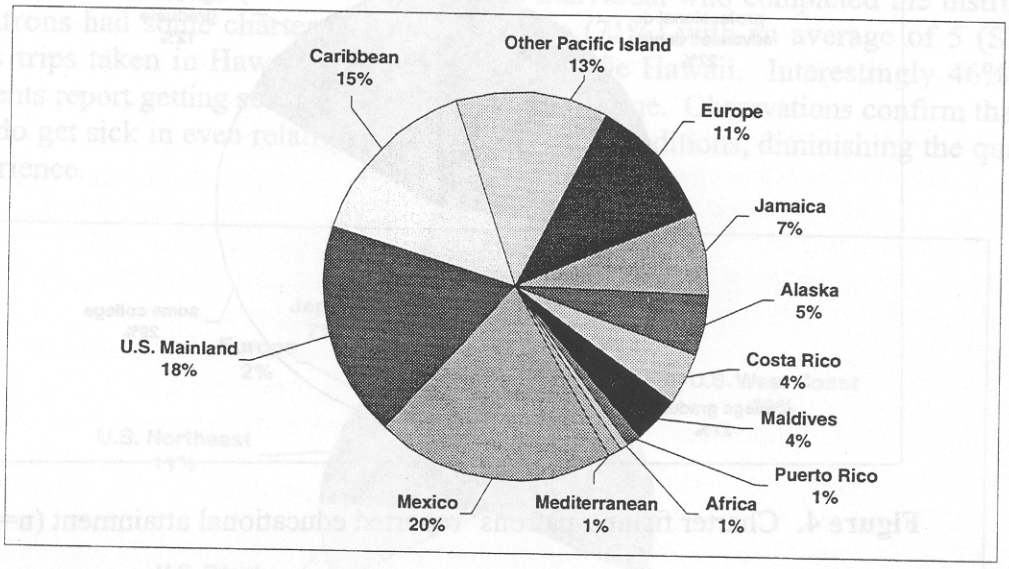

Figure 5. Charter fishing patrons' reported destinations considered for vacation other than Hawaii (n=78).

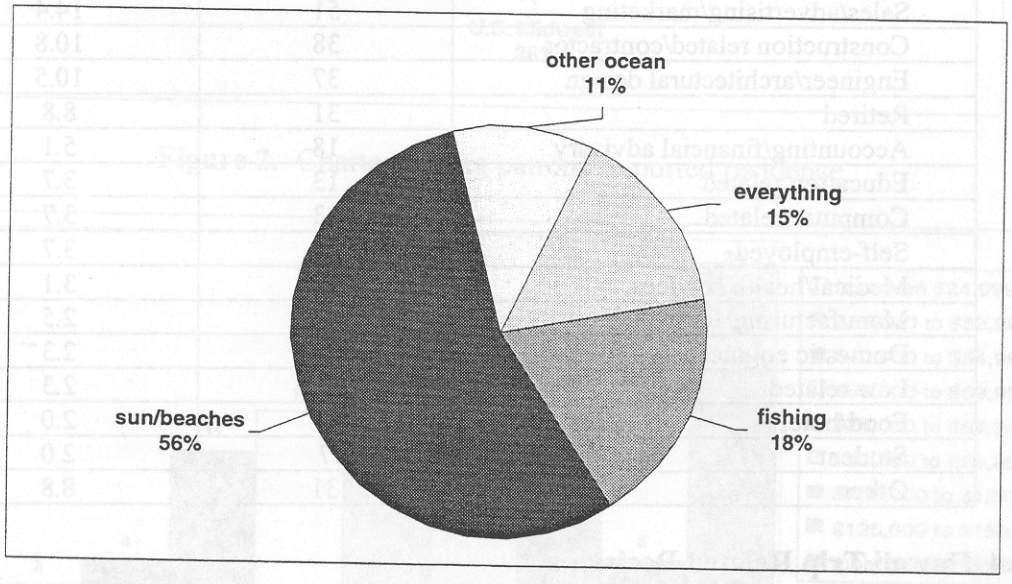

Figure 6. Charter fishing patrons' reported primary attractions for coming to Hawaii for vacation.

Respondents' trips to Hawaii averaged 11 days and ranged from 3 to 65 days. This average is longer than the average length of stay for all Hawaii visitors (8.9 days) (Hawaii State Department of Business, Economic Development and Tourism, Tourism Research Branch, Annual Visitor Research Report (annual) and records). The average size of the respondents' party contained 3 adults (range 1-20), and those who indicated they had children typically brought 2 (range 1-7).

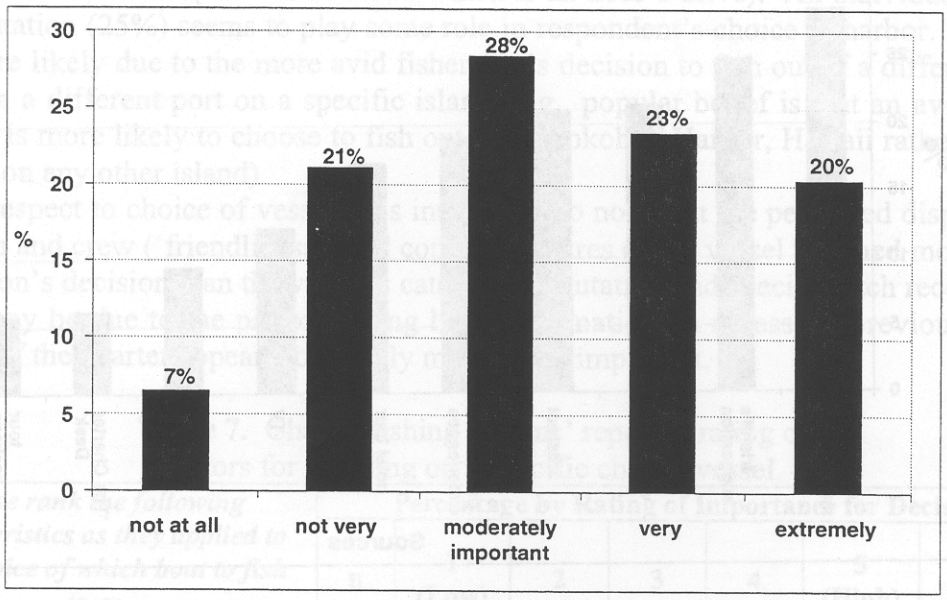

Figure 7. Charter fishing patrons' reported importance of charter fishing in decision to come to Hawaii.

1.3.5 Charter Fishing Trip Related Decisions

When charter fishing patrons were asked "*What prompted you to go charter fishing*?" four sources of information were essentially equal—magazine advertisement (29%), suggestion of a friend (25%), Internet (21%), and personal visit to the harbors (21%) (Figure 8). The response to "previous fishing experience in Hawaii" (19%), and observations by the researchers during patron interviews, indicated that there is a moderate amount of repeat customers in Hawaii's charter fishing business. Patrons who reported they had previous charter fishing experience averaged 5 trips in Hawaii and 6 outside Hawaii. Table 5 displays the number of reported previous trips.

Table 5. Patrons' reported number of previous charter fishing trips.

No. of Previous Trips	In Hawaii	Outside Hawaii
1	28	30
2	10	28
3	3	16
4	5	9
5	5	8
6-10	4	17
>11	5	16
Total	60	124

Charter fishing patrons were also asked the importance of specific factors in motivating them to go charter fishing in Hawaii (Table 6). Respondents indicated that factors relating to having fun and an adventure were more important than catching fish for personal consumption and much more important than business purposes. Fighting and catching fish, however, were also very important to many charter fishing patrons.

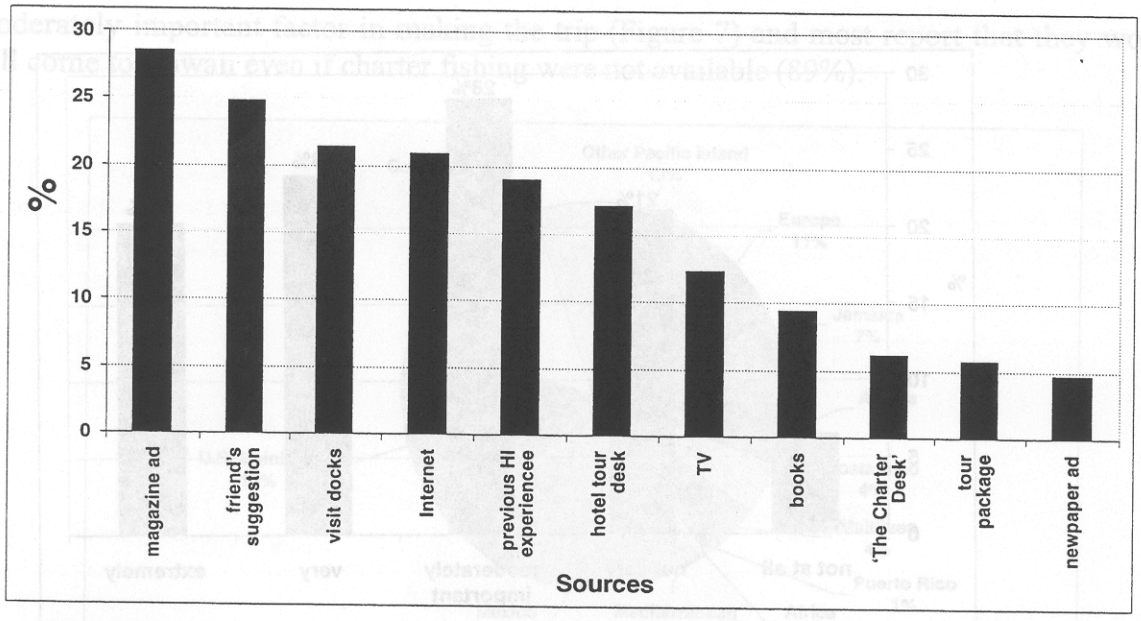

Figure 8. Charter fishing patrons' reported sources of information that prompted them to go charter fishing in Hawaii. The "Charter Desk", a company which books trips for numerous charter vessels, is located at Honokohau Harbor, Hawaii.

Table 6. Charter fishing patrons' scaled importance of motivating factors to go charter fishing in Hawaii.

For each factor listed, please indicate its importance in motivating you to go charter fishing in Hawaii	Reported Level of Importance (%)*			
	n	Not at All Important	Moderately Important	Very Important
Have fun	205	0	6	**94**
Experience challenge	201	2	22	**76**
Fight a fish	202	4	27	**69**
Seek adventure	197	9	29	**61**
Be on the ocean	202	6	33	**61**
Share fun with others	201	11	31	**57**
A convenient way to go fishing	196	11	40	**49**
Escape routine/tension	197	15	42	**44**
Learn about nature	197	**33**	**46**	21
Develop/test fishing skills	196	**42**	38	20
Catch fish to share with others	201	**43**	37	19
Enjoy camaraderie	197	**45**	39	16
Catch fish to eat personally	199	**52**	33	15
Catch fish for trophy	194	**67**	21	12
Demonstrate skills	195	**86**	11	3
Business-related purposes	193	**96**	4	0

*Highest percentages are bolded.

Patrons reported that "closest to where I am staying" was the primary reason (51%) for deciding which harbor to fish from. This was expected considering most harbors are located near popular tourist resorts (e.g., the larger Kewalo Basin charter fleet is within a 10 minute

drive of Waikiki, as compared to Haleiwa which is an hour's drive). An individual harbor's catch reputation (25%) seems to play some role in respondent's choice of harbor. However, this is more likely due to the more avid fisherman's decision to fish out of a different island rather than a different port on a specific island (e.g., popular belief is that an avid, serious fisherman is more likely to choose to fish out of Honokohau Harbor, Hawaii rather than any other port on any other island).

With respect to choice of vessel, it is interesting to note that the perceived disposition of the captain and crew ('friendliness') and comfort features of the vessel weighed more heavily in the patron's decision than the vessel's catch rate reputation and species catch record (Table 7). This may be due to the patron having little information on a vessel's previous catches. The price of the charter appears to be only moderately important.

Table 7. Charter fishing patrons' reported rating of factors for deciding on a specific charter vessel.

Please rank the following characteristics as they applied to your choice of which boat to fish from	**Percentage by Rating of Importance for Decision***						
	n	**1 (Low)**	**2**	**3**	**4**	**5 (High)**	**Mean Rank (Std)**
Trip cost	200	12	10	**32**	25	21	3.3 (1.3)
Catch rate reputation	194	**29**	11	20	17	24	3.0 (1.6)
Species catch record	194	**26**	15	21	18	20	2.9 (1.5)
Comfort features	201	10	11	26	**30**	22	3.4 (1.2)
Friendliness captain/crew	199	9	8	12	25	**47**	3.9 (1.3)

*Highest percentages are bolded.

Patrons were also asked the importance of catching a blue marlin in their decision to go charter fishing. Almost half of the respondents reported they definitely would not go fishing if they knew they were not going to catch a blue marlin, while 38% reported that they definitely would still take the trip (Figure 9).

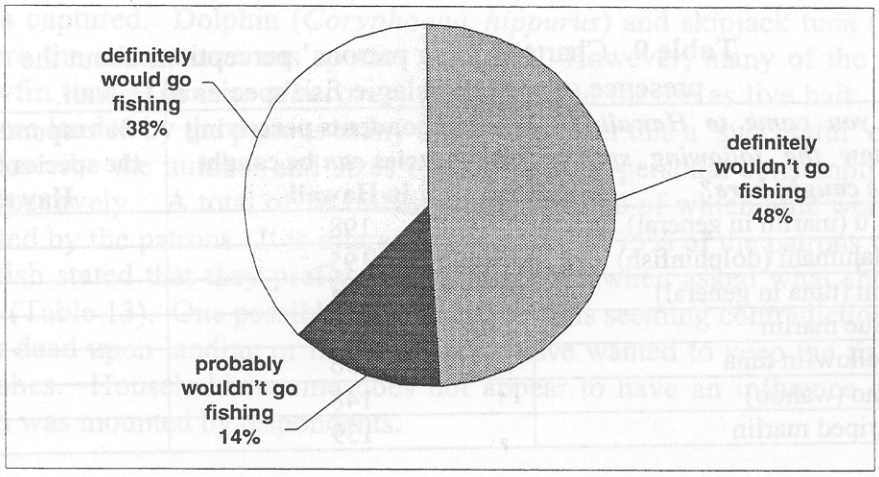

Figure 9. Importance of catching a blue marlin in charter fishing patrons' decision to go charter fishing. Patrons were asked *"If you knew you were not going to catch a blue marlin on your charter trip today would you still go charter fishing?"*

1.3.6 Charter Fishing Trip Details

Fishing patrons chartered a half-day trip (45%), full-day trip (40%) or three-quarter day trip (15%). Sixty-three percent of the trips were chartered as private trips, meaning one party paid for the entire trip compared to shared trips where the total cost of the trip is shared by multiple distinct fishing parties. As earlier analyses indicated, patrons typically fish with family and friends rather than business associates. Table 8 shows that the types of trips that patrons typically take are not the same across islands. This, however, may be due to the type of trips available at the time of booking.

Table 8. Charter fishing patrons' reported percentage of chartered fishing trip lengths and types by island.

Island	n	Trip Length			Trip Type	
		% Half day	% Three-quarter day	% Full day	% Shared	% Private
Kauai	12	67	17	17	58	42
Oahu	120	28	15	57	38	62
Molokai	11	0	0	100	27	73
Maui	40	33	35	33	56	44
Hawaii	101	57	11	32	17	83

Most respondents did not have intentions of taking other charter fishing trips during their remaining time in Hawaii (75%). A total of 44 half-day and 126 full-day additional trips were planned by 99 people who indicated they were interested in going charter fishing again during their current trip to Hawaii.

1.3.7 Basic Perceptions about Charter Fishing in Hawaii

Table 9 fish shows that respondents, in general, were fairly knowledgeable about some of the fish species that are caught in Hawaiian waters. The majority of respondents also support catch/tag and release ethics as they apply to billfish (Figure 10).

Table 9. Charter fishing patrons' perceptions about the presence of various pelagic fish species in Hawaii.

Before you came to Hawaii did you know the following species could be caught here?	**no. respondents perceiving the species *can* be caught in Hawaii**	**% respondents perceiving the species *can* be caught in Hawaii (n= 209)**
A'u (marlin in general)	198	95
Mahimahi (dolphinfish)	195	93
Ahi (tuna in general)	184	88
Blue marlin	174	83
Yellowfin tuna	156	75
Ono (wahoo)	148	71
Striped marlin	139	67

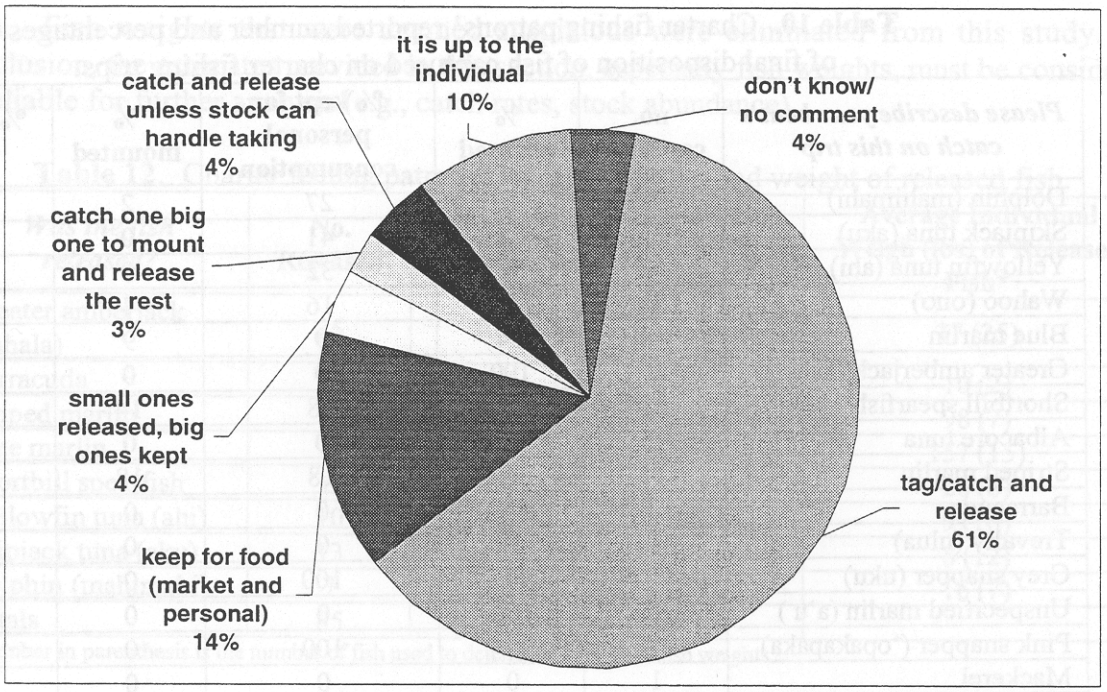

Figure 10. Charter fishing patrons' responses to *"What do you think should be done with billfish caught during your charter fishing trip?"*

1.3.8 Fishing Success and Disposition of Catch

The word 'captured' is used to describe fishing success rather than 'landed' since some fish were released at sea. In the case of marlin and greater amberjack (*Seriola dumerili*) many were tagged and released. Many small and less valuable species were also released.

Two hundred and ten respondents captured 482 total fish on their fishing trip. Table 10 describes fish that were captured and the final disposition of those fish as reported by respondents. Seventy-four percent of the trips were considered successful because at least one fish was captured. Dolphin (*Coryphaena hippurus*) and skipjack tuna (*Katsuwonus pelamis*) were the most numerous species captured. However, many of the skipjack and small yellowfin tuna (*Thunnus albacares*) were captured for use as live bait. Even though these fish were landed by the patrons many did not consider this a 'successful' catch. Tables 11 and 12 describe the number and sizes of fish kept for personal consumption and those released, respectively. A total of 76 billfish were captured of which nine were reported as being mounted by the patrons. It is interesting to note that 75% of the patrons who mounted a captured fish stated that they prefer catch-and-release when asked what should be done with billfish (Table 13). One possible explanation for this seeming contradiction may be that the fish was dead upon landing or the vessel may have wanted to keep the fish against the patron's wishes. Household income does not appear to have an influence on whether a captured fish was mounted by respondents.

Table 10. Charter fishing patrons' reported number and percentages of final disposition of fish captured on charter fishing trips.

Please describe your boat's catch on this trip	no. captured	% released	% kept for personal consumption	% mounted	% kept by vessel
Dolphin (mahimahi)	155	5	27	2	66
Skipjack tuna (aku)	86	15	41	0	44
Yellowfin tuna (ahi)	63	16	32	0	52
Wahoo (ono)	56	0	16	4	80
Blue marlin	44	34	9	9	48
Greater amberjack (kahala)	25	100	0	0	0
Shortbill spearfish	21	29	38	14	19
Albacore tuna	13	0	0	0	100
Striped marlin	11	64	18	18	0
Barracuda	2	100	0	0	0
Trevally (ulua)	1	0	0	0	100
Grey snapper (uku)	1	0	100	0	0
Unspecified marlin (a'u)	1	100	0	0	0
Pink snapper ('opakapaka)	1	0	100	0	0
Mackerel	1	0	0	0	100
Whitetip shark	1	100	0	0	0
Totals	482	18	25	3	54

Table 11. Charter fishing patrons' reported number and weights of fish kept for personal consumption.

Did you keep the fish?	No. Kept	% Kept	Total Weight (lbs) of Fish Kept	Average Individual Weight (lbs.) of Fish Kept*
Dolphin (mahimahi)	42	27	680	16 (42)
Skipjack tuna (aku)	35	41	349	11 (32)
Yellowfin tuna (ahi)	20	32	215	11 (20)
Wahoo (ono)	9	16	246	27 (9)
Shortbill spearfish	8	38	361	45 (8)
Blue marlin	4	9	735	184 (4)
Striped marlin	2	18	120	60 (2)
Grey snapper (uku)	1	100	11	11 (1)
Pink snapper ('opakapaka)	1	100	11	11 (1)
Total	122	25	2728	

*Number in parenthesis is the number of fish used to determine individual fish weights.

Some warning must be given as to the nature of catch information provided by charter fishing patrons, for there appear to be some potential biases. While the number of total fish caught is deemed fairly accurate, a taxonomic bias may be occurring (patrons may be confused over the use of local names of some species) and/or the weights of individual fish may be misreported, primarily due to inaccurate measurements (many fish were not accurately weighed (by using a scale) but were estimated either while the fish was in the water, aboard the vessel or lying on the docks). For instance, 1-lb albacore tuna (*Thunnus alalunga*) were reported as being captured by respondents. Because 1-lb albacore tuna are not found in Hawaiian waters it is impossible to determine if the captured fish was an albacore tuna that weighed more or if, possibly, it was the commonly caught 1-lb skipjack

tuna. Fish weights that were deemed suspicious were eliminated from this study. In conclusion, the estimates provided in this section, especially fish weights, must be considered unreliable for further analysis (e.g., catch rates, stock abundance).

Table 12. Charter fishing patrons' reported number and weight of released fish.

Was the fish released?	No. Released	% Released	Total Weight (lbs) of Fish Released	Average Individual Weigh (lbs) of Released Fish*
Greater amberjack (kahala)	25	100	419	17 (25)
Barracuda	2	100	20	10 (2)
Striped marlin	7	64	685	98 (7)
Blue marlin	15	34	2355	157 (15)
Shortbill spearfish	6	29	165	28 (6)
Yellowfin tuna (ahi)	10	16	85	9 (10)
Skipjack tuna (aku)	13	15	98	8 (12)
Dolphin (mahimahi)	7	5	112	16 (7)
Totals	85	18	3939	

*Number in parenthesis is the number of fish used to determine individual fish weights.

Table 13. Charter fishing patrons' reported species and size of mounted fish, income level, and perception of what should be done with captured billfish.

Mounted fish	Weight (lb)	Income Level of Angler	*What should be done with billfish?*
Skipjack tuna (aku)	12	$40,000-$54,000	catch and released preferred unless population can support taking.
Blue marlin	602	$55,000-69,999	prefer catch and release
Blue marlin	589	>$150,000	prefer catch and release
Blue marlin	510	$100,000-$124,000	prefer catch and release
Blue marlin	160	$25,000-$39,999	prefer catch and release
Dolphin (mahimahi)	39	$100,000-$124,999	prefer catch and release
Dolphin (mahimahi)	36	$40,000-$54,999	catch and released preferred unless population can support taking.
Dolphin (mahimahi)	36	$40,000-$54,999	prefer catch and release
Wahoo (ono)	22	<$24,999	prefer catch and release
Wahoo (ono)	25	$85,000-$99,999	catch and released preferred unless population can support taking.
Shortbill spearfish	70	$25,000-$40,000	prefer catch and release
Shortbill spearfish	70	$125,000-$150,000	prefer catch and release
Shortbill spearfish	30	> $150,000	prefer catch and release
Striped marlin	71	> $150,000	prefer catch and release
Striped marlin	75	$40,000-$54,999	it's up to the individual
Only 15 (3%) of the 482 total pieces captured were mounted for trophies.			

1.3.9 Charter Fishing Patrons' Satisfaction with the Fishing Trip

As indicated earlier (Table 6) charter fishing patrons placed a higher emphasis on having fun than catching fish. Nonetheless, not catching fish or not catching enough fish combine (65%) to become the factor that respondents liked least about their Hawaii charter fishing

experience. The second least desirable aspect of the fishing trip was bad weather/seasickness (15%).

The charter fishing experience offers some desirable attributes, which can at least partially override the negative dimensions of failing to catch fish. When asked "What did you like most about your Hawaii charter fishing experience?" Twenty-nine percent reported that they liked the captain and crew and comfort of vessel the best. This was followed by catching fish (26%) and being on the ocean/seeing whales/weather (25%).

This pattern was confirmed when respondents were asked to rank specific attributes of their fishing experience at the end of their trip (Table 14). The friendliness of the captain and crew, the comfort of the vessel and the overall satisfaction with the fishing trip scored highest and catch rate and catch composition scored lowest.

Table 14. Charter fishing patrons' reported scaled level of satisfaction with selected trip attributes.

Please rank your trip on each of the following factors	Level of Satisfaction (Percentage by Rating)*						
	n	Low (1)	2	3	4	High (5)	Mean Rating
Captain/crew	208	1	0	6	11	**82**	4.7
Weather conditions	208	0	5	11	21	**63**	4.4
Comfort features	209	2	3	18	33	**44**	4.1
Overall experience	206	3	6	16	32	**43**	4.0
Trip cost	209	5	11	**40**	22	22	3.5
Catch rate	207	**36**	17	15	15	17	2.6
Species caught	202	**36**	14	21	16	13	2.6

*Highest percentages are bolded.

Overall satisfaction of the charter fishing experience was also apparent in respondents' answers to other questions. The majority (79%) of respondents answered "Yes" to the question "If you had the chance to repeat this fishing trip, given the same weather, catch, cost and all other factors you experience, would you take the trip again?" Respondents also gave charter fishing in Hawaii a high rank (avg.= 7.4; SD= 2.2) when asked "On a scale of 1 (low) to 10 (high), how would you rate deep-sea charter fishing in Hawaii compared to charter boat fishing in other places you have visited or heard about?"

In conclusion, charter fishing patrons who returned the survey instruments, as well as those that were interviewed by researchers, overwhelmingly indicated that they were at least satisfied with the overall fishing experience, including the captain and crew and comfort of the vessel, despite dissatisfaction with the amount of fish captured. This highlights the importance of the hosts in the critical host-guest interface (see Section 2).

1.3.10 Expenditures

1.3.10.1 Economic Characteristics of the Trip to Hawaii

The reported single most expensive part of a trip to Hawaii was the airfare. Estimated roundtrip airfare/person was $703. Nine respondents used frequent flyer mileage for their trip to Hawaii. Twenty-six parties, comprising a total of 96 people, purchased tour packages with the average package costing $1462/person. Table 15 reports on some of the costs associated with visiting Hawaii.

Table 15. Charter fishing patrons' reported expenditures for one day in Hawaii.

Please indicate the total amount of money spent on each item by all members in your party (if not in tour package)	n	Mean Cost ($)*	Std. dev. ($)	Range ($)
Food/beverage**	129	50	42	5-350
Lodging**	84	103	139	15-1,000
Car rental***	96	70	63	20-400
Airfare to other Hawaiian Islands**	67	65	71	2-150
Taxi***	19	20	33	2-150
Gratuities***	28	21	37	2-400
Gifts, souvenirs***	84	99	99	10-600
Clothing**	43	92	101	10-450
Sundries***	51	28	27	2-100

*Only patrons who reported the costs were used in estimates (i.e., $0 spent were not included).
**Per person based on reported party size.
***Per party of any size.

1.3.10.2 Economics and Valuation Aspects of the Charter Fishing Trip

The reported average cost per person to go charter fishing in Hawaii was $195 (SD= $129). Table 16 shows that the cost is dependent on the type of trip (shared or private trip) and the length of the trip (half-day, three-quarter-day, full-day). A statistical analysis (analysis of covariance), however, showed that the effect of the number of people in the fishing party on the cost per person is approximately double that of the type and length of trip combined. Using the average cost of private half-day, three-quarter-day, and full-day trips, Figure 11 illustrates that the average cost per person decreases as the number of people in the fishing trip increases. This is simply due to having more people to share the expense of chartering a vessel.

Table 16. Charter fishing patrons' reported cost per person to charter a fishing trip by different trip lengths and types. Standard deviations are shown in parenthesis.

	Trip Type	
Trip Length	**Shared**	**Private**
Full-day	$147 ($29)	$283 ($167)
Three-quarter-day	$141 ($33)	$188 ($109)
Half-day	$96 ($29)	$202 ($104)

Charter patrons were also asked about other expenditures associated with their fishing trip (Table 17). The costs of mounting a catch and the amount spent on fishing tackle were the greatest. Because only five people indicated they were going to have a fish mounted and only three people brought their own fishing tackle, these are considered atypical costs associated with charter fishing in Hawaii (Note: while the valuation instrument asks patrons what was done with the captured fish (of which 16 said mount) the expenditure instrument only asks how much was spent on mounting a captured fish (of which five people reported the cost of mounting)). It is important to note that very little of the money generated by these two expenditures remains in Hawaii because the charter fleet tends to have their mounting done on the mainland U.S. and most of the fishing tackle that people bring on the fishing trip was purchased in their home town. One expenditure of interest is the amount patrons spent tipping the captain and crew of the charter vessel. The average reported tip was $59 (range $0-$350). The distribution of the tips is displayed in Table 18.

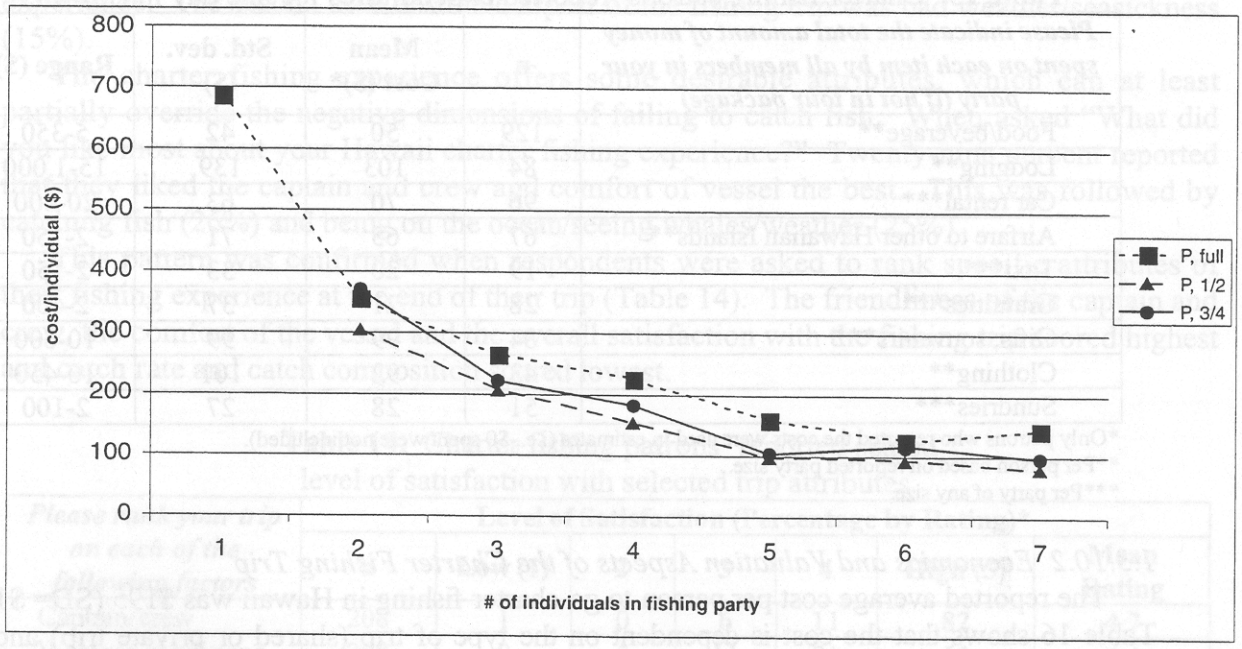

Figure 11. Comparison of average charter fishing cost per person to the number of individuals in fishing party for private (P) full- (full), half- (1/2) and three-quarter-day (3/4) fishing trips. Costs as reported by patrons.

Table 17. Charter fishing patrons' reported fishing-related expenditures.

Please indicate the total mount spent on each item by all members in your party	**n**	**Average cost ($)**	**Range ($)**
Gratuities to captain/crew	146	59	5-350
Food/beverages	132	33	3-275
Special tackle	3	1,377	30-4,000
Special clothing	24	53	8-200
Sundry items	88	15	4-55
Fish mounting	5	720	450-1000

*These data do not reflect trip length or party size; only patrons who reported the costs were used in estimates (i.e., $0 spent were not included).

Table 18. Charter fishing patrons' reported fishing trip gratuities distribution.

Tip Value $	**Frequency**	**Percent (n=153)**
0	23	15
1-25	39	25
26-50	41	27
51-75	13	8
76-100	23	15
101-200	8	5
>200	6	4

A contingency valuation method was used to estimate the charter fishing patron's monetary valuation of charter fishing above and beyond the costs to charter a vessel (Samples and Schug (1985) use the term "consumer surplus"). Patrons were asked three contingency

valuation questions. The first gave the patron a choice of receiving a cash gift or having an absolute guarantee of landing an average size (225 lb) Pacific blue marlin during the charter fishing trip. Greater than 85% of the patrons chose the marlin over cash levels under $500 and 66% chose the marlin rather than $1000 gift (Figure 12). The second question gave the patron a choice of a cash offer rather than going charter fishing for the remainder of their trip to Hawaii. Greater than 85% of the patrons opted to go fishing over cash levels under $250; however, only 31% choose fishing over levels greater than $250 (Figure 13). It appears, therefore, that most patrons would rather fish than accept monetary compensation. However, patrons were more willing to accept the money when they were not guaranteed the marlin.

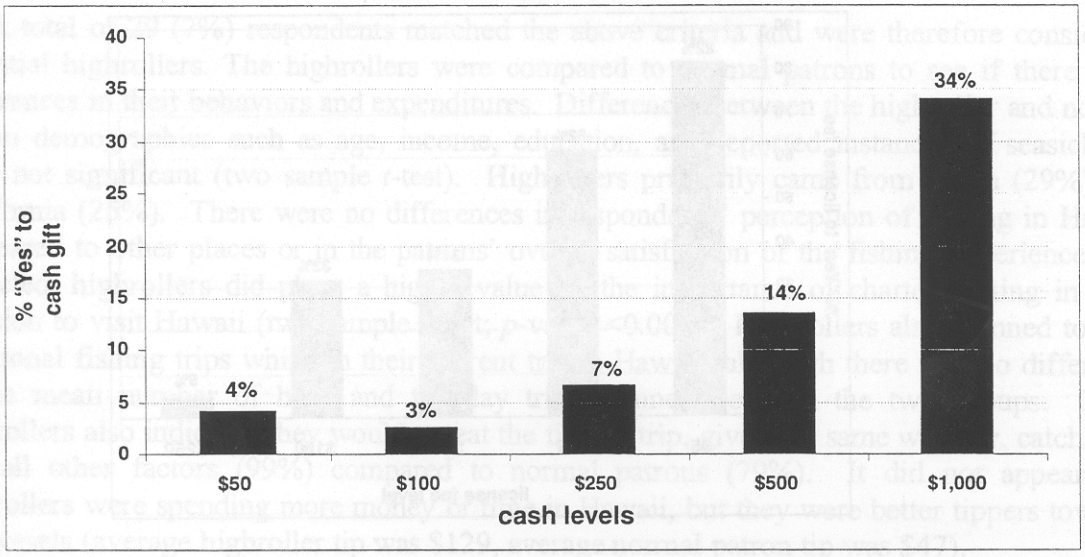

Figure 12. Charter fishing patrons' responses to *"Would you rather accept a cash gift of $___ or go fishing with the guarantee of catching a 225 lb blue marlin?"*

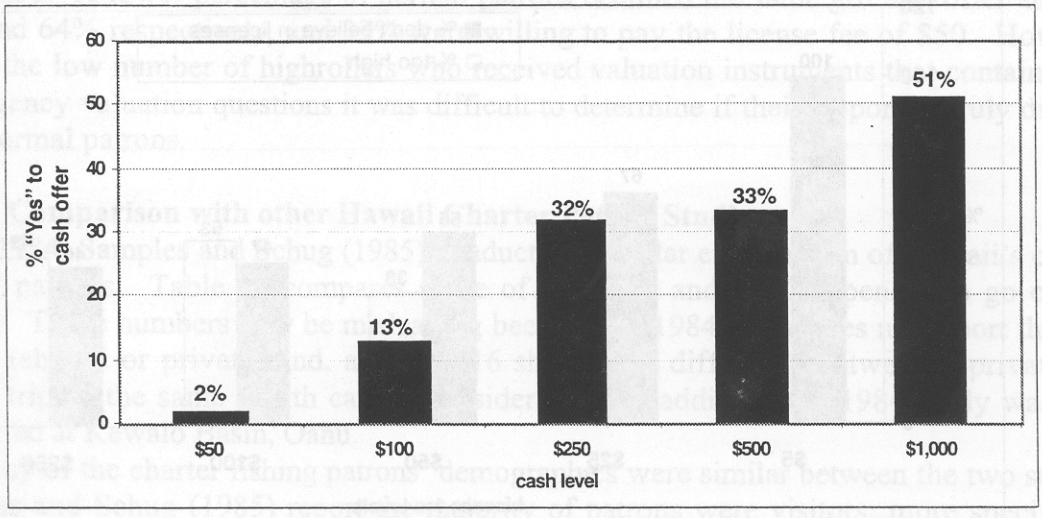

Figure 13. Charter fishing patrons' responses to "*Would you accept a cash offer of $___ to not go charter fishing for the rest of your stay in Hawaii?*"